H. Helicopter Load Calculation (HCM-8). (See Exhibits A-8)

1. Purpose. The purpose is to ensure that the aircraft is capable of carrying a specified load to an identified elevation at a given density altitude.

2. Applicability. This form is required to be completed daily for all helicopter flights prior to the start of operations. A minimum of one calculation must be made, with subsequent loads manifested. Additional calculations may be required as conditions change.

   ➔ Form HCM-10, helicopter Load Capability Summary Multiple helispots and fuel loads may be used to summarize load calculation information and plan flights. However, data for altitudes, temperatures, and fuel weights indicated must be supported by load calculations completed from the appropriate chart(s).

3. Responsibility and Instructions For Completion. See Exhibits A-7 and A-8. Refer to Chapter 7 for further information.

   - For USDI agencies, the Pilot is required to complete Blocks 1-15. For USDA-FS, the Pilot is required to complete Blocks 1-15.

   - The Pilot must utilize the applicable charts in the aircraft flight manual, referencing them each time a load calculation is initiated. The Helicopter Manager is responsible for ensuring that the Pilot does this.

   - The Pilot signs after the Helicopter Manager has completed the remainder of the form.

   - One copy is always left on the ground at takeoff site, or, if no one is at the takeoff site, the flight following facility must be informed of personnel on board (the form must still be completed).

   Specific instructions for completion of the USDI and USDA-FS versions of the load calculation follow. Instructions for completion of the CDF load calculation are included on Exhibit A-9. Other state and local agencies should reference agency guidance.

4. Routing and Filing.

   - Fire. At the termination of fire assignments, the Helicopter Manager is responsible for submitting copies of all load calculations, with copies of manifests attached, to the Helibase Manager. These copies become part of the incident file.

   - Project. At the termination of project missions, the Helicopter Manager is responsible for submitting all load calculations, with manifests attached, to the predetermined agency Aviation Manager or designee (for example, the Dispatcher). That individual includes the load calculation(s) as part of the flight file.

5. Posting. At incident helibases, load calculations for each helicopter for a variety of altitudes and temperatures shall be posted on the display board. A standard fuel load for similar makes/models helicopters should be utilized.

6. ➔ Related Forms. Form HCM-9, Interagency Helicopter Passenger/Cargo Manifest, is used to document manifest information under one "umbrella" load calculation. Form HCM-10, Helicopter Load Capability Summary Multiple Helispots and Multiple Fuel Loads, may be used to summarize load calculation information. Form HBM-4, Allowable Payload Chart, and HBM-5, Load Capability Planning Summary (By Single Helispot), are completed from individual load calculations. Load calculation, manifest, and flight time information is summarized on Form HCM-15, Helicopter Daily Use And Cost Summary, and is utilized to complete the agency flight payment document.

INSTRUCTIONS
A load calculation must be completed for all flights. A new calculation is required when operating conditions change (± 1000' in elevation or ± 5°C in temperature) or when the Helicopter Operating Weight changes (such as changes to the Equipped Weight, changes in flight crew weight or a change in fuel load).

All blocks must be completed. Pilot must complete all header information and Items 1-13. Helicopter Manager completes Items 14 & 15.

1. DEPARTURE – Name of departure location and current Pressure Altitude (PA, read altimeter when set to 29.92) and Outside Air Temperature (OAT, in Celsius) at departure location.

2. DESTINATION – Name of destination location and PA & OAT at destination. If destination conditions are unknown, use MSL elevation from a map and Standard Lapse Rate of 2° C/1000' to estimate OAT.

3. HELICOPTER EQUIPPED WEIGHT – Equipped Weight equals the Empty Weight (as listed in the Weight and Balance Data) plus the weight of lubricants and onboard equipment required by contract (i.e. survival kit, rappel bracket).

4. FLIGHT CREW WEIGHT – Weight of the Pilot and any other assigned flight crew members on board (i.e. Co-pilot, flight engineer, navigator) plus the weight of their personal gear.

5. FUEL WEIGHT – Number of gallons onboard X the weight per gallon (Jet Fuel = 7.0 lbs/gal; AvGas = 6.0 lbs/gal).

6. OPERATING WEIGHT – Add items 3, 4 and 5.

7a. PERFORMANCE REFERENCES – List the specific Flight Manual supplement and hover performance charts used to derive Computed Gross Weight for Line 7b. Separate charts may be required to derive HIGE, HOGE and HOGE-J. HIGE: use Hover-In-Ground-Effect, External/Cargo Hook Chart (if available). HOGE & HOGE-J: use Hover-Out-Ground-Effect charts for all HOGE operations.

7b. COMPUTED GROSS WEIGHT - Compute gross weights for HIGE, HOGE and HOGE-J from appropriate Flight Manual hover performance charts using the Pressure Altitude (PA) and temperature (OAT) from the most restrictive location, either Departure or Destination. Check the box in Line 1 (Departure) or Line 2 (Destination) to indicate which values were used to obtain Computed Gross Weight.

8. WEIGHT REDUCTION – The Government Weight Reduction is required for all "non-jettisonable" loads. The Weight Reduction is optional (mutual agreement between Pilot and Helicopter Manager) when carrying jettisonable loads (HOGE-J) where the pilot has total jettison control. The appropriate Weight Reduction value, for make & model, can be found in the current helicopter procurement document (contract).

9. ADJUSTED WEIGHT – Line 7b minus Line 8.

10. GROSS WEIGHT LIMITATION – Enter applicable gross weight limit from Limitations section of the basic Flight Manual or the appropriate Flight Manual Supplement. This may be Maximum Gross Weight Limit for Take-Off and Landing, a Weight/Altitude/Temperature (WAT) limitation or a Maximum Gross Weight Limit for External Load (jettisonable). Limitations may vary for HIGE, HOGE and HOGE-J.

11. SELECTED WEIGHT – The lowest weight, either line 9 or 10, will be entered for all loads. Applicable limitations in the Flight Manual must not be exceeded.

12. OPERATING WEIGHT – Use the value entered in Line 6.

13. ALLOWABLE PAYLOAD – Line 11 minus Line 12. The maximum allowable weight (passengers and/or cargo) that can be carried for the mission. Allowable Payload may differ for HIGE, HOGE and HOGE-J.

14. PASSENGERS AND/OR CARGO – Enter passenger names and weights and/or type and weights of cargo to be transported. Include mission accessories, tools, gear, baggage, etc. A separate manifest may be used.

15. ACTUAL PAYLOAD – Total of all weights listed in Item 14. Actual payload must not exceed Allowable Payload for the intended mission profile, i.e. HIGE, HOGE or HOGE-J.

Both Pilot and Helicopter Manager must review and sign the form. Check if HazMat is being transported. Manager must inform the pilot of type, quantity and location of HazMat onboard.

INTERAGENCY HELICOPTER LOAD CALCULATION Electronic Version 1.0 (3/04)	MODEL
	N#
PILOT(S)	DATE
MISSION	TIME

1 DEPARTURE	PA	OAT	
2 DESTINATION	PA	OAT	
3 HELICOPTER EQUIPPED WEIGHT			
4 FLIGHT CREW WEIGHT			
5 FUEL WEIGHT gals X lbs/gal			
6 OPERATING WEIGHT (3 + 4 + 5)			

	Non-Jettisonable		Jettisonable
	HIGE	HOGE	HOGE- J
7a PERFORMANCE REFERENCE (List chart/supplement from Flight Manual)			
7b COMPUTED GROSS WEIGHT (From Flight Manual **Performance** Section)			
8 WEIGHT REDUCTION (Required for all Non-Jettisonable loads)			
9 ADJUSTED WEIGHT (7b minus 8)			
10 GROSS WEIGHT LIMITATION (From Flight Manual **Limitations** Section)			
11 SELECTED WEIGHT (**Lowest** of 9 or 10)			
12 OPERATING WEIGHT (From Line 6)			
13 ALLOWABLE PAYLOAD (11 minus 12) ***Exceeds = Allowable Exceeded***			

14 PASSENGERS/CARGO	
15 ACTUAL PAYLOAD (Total of all weights listed in Item 14) **Line 15 must not exceed Line 13 for the intended mission (HIGE, HOGE or HOGE-J)**	

PILOT SIGNATURE	HazMat Onboard
MANAGER SIGNATURE	YES ☐ NO ☐

HCM-8 (01/05)

Electronic Load Calculation Guidelines

The electronic load calculation is available as a training tool or may be used in lieu of the booklet form. The form is an Excel worksheet and makes automatic computations as data is entered by the pilot or government representative. It is really no different than the paper version; ***Equipped Weight, Computed Gross Weight and Gross Weight Limitations must be derived by flight manual reference and entered by the pilot.***

Please be aware of the following important notes:

1) If you receive this as an E-mail attachment, save to hard drive prior to using.
2) The entire worksheet is protected. The format and function cannot be altered.
3) Worksheets can be completed, named and saved individually.
4) As the cursor is moved over a field, a Comment Box will appear offering explanation or instruction for that field.
5) Information is entered into the yellow fields by the user.
6) The blue cells are locked and data cannot be entered by the user. They perform automatic functions.
7) If the electronic format is used for actual helicopter operations, the form must be printed out in black & white, signed by the Pilot and Helicopter Manager and retained.

Exhibit A-9: Form CDF 7540-130-0262
Helicopter Load Calculation

INSTRUCTIONS

ITEM 1-15 Pilot complete 1-15. Helitack Captain or Officer completes the balance of the form. Pilot and Captain shall sign.

1. **PRESSURE ALTITUDE.** Read altimeter when set to 29.92. **TEMPERATURE.** Record in degrees Celsius from aircraft Outside Air Temperature Gauge.
2. **PRESSURE ALTITUDE.** Use MSL/Elevation from Aeronautical Chart until field elevation is available. **TEMPERATURE.** Record in degrees Celsius using standard lapse rate.
3. **HELICOPTER EQUIPPED WEIGHT.** Empty weight of A/C obtained from A/C weight and balance record. Include weight of accessories and oil.
4. **FLIGHT CREW WEIGHT.** Weight of Pilot(s) and additional crew member (s) plus flight and personal gear.
5. **DEPARTURE FUEL.** AvGas = 6.0 lbs/gal. Jet Fuel = 6.8 lbs/gal.
6. **FOAM.** Foam concentrate = 8.7 lbs/gal.
7. **ENROUTE FUEL.** Subtract enroute fuel weight from destination operating weight (line 14).
8. **COMPUTED MAXIMUM GROSS WEIGHT.** Obtain departure and destination gross weights from appropriate HIGE/HOGE performance charts contained in A/C flight manual. Non-jettisonable load flights landing in adverse terrain and external load missions will be computed from HOGE performance charts.
9. **WEIGHT REDUCTION.** Enter applicable weight reduction for helicopter model as shown on Weight Reduction Chart. External water/retardant loads that can be safely released do not require downloading at Pilot's discretion.
10. **TAKEOFF AND LANDING LIMITS.** Enter applicable Takeoff and Landing Weight Limit as found in the LIMITATIONS section of Handbook.
11. **SELECTED WEIGHT.** If line 11 is greater than line 12, line 11 may be used for JETTISONABLE loads. However, the lowest weight, line 11 or 12, will be used for NON-JETTISONABLE loads.
12. **OPERATING WEIGHT.** Departure operating weight from line 7. Destination operating weight is reduced by enroute fuel, line 8.
13. **ALLOWABLE PAYLOAD.** The maximum allowable passenger and/or cargo weight that can be carried for the mission.
14. **PASSENGER AND/OR CARGO MANIFEST.** Manifest departure passengers by name and/or cargo, by type, for each flight. List weights, including personal gear, in appropriate internal or external load column. Departure passengers and cargo shall be determined by destination capabilities.
15. **WATER/RETARDANT.** List gallons that bucket has been adjusted for or tank will be filled to. Weight = 8.3 pounds per gallon.
16. **ACTUAL PAYLOAD.** Total of all weights in Item 16. Shall not exceed the allowable payload (line 15).

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION **CDF** HELICOPTER LOAD CALCULATION		COPTER NO. AND MODEL		
PILOT		CAPTAIN		
MISSION		DATE	TIME	
1. DEPARTURE		PRESS ALT	TEMP	
2. DESTINATION		PRESS ALT	TEMP	
3. HELICOPTER EQUIPPED WEIGHT				
4. FLIGHT CREW WEIGHT				
5. DEPARTURE FUEL (GALS X LBS)				
6. FOAM (GALS X LBS)				
7. OPERATING WEIGHT (3+4+5+6)				
8. ENROUTE FUEL_____LBS Reduce Destination Operating Weight by this amount	DEPARTURE	DESTINATION		
	HIGE	HIGE	HOGE	
	INTERNAL	INTERNAL	INTERNAL	EXTERNAL
9. COMPUTED MAX GROSS WT				
10. WEIGHT REDUCTION				
11. ADJ MAX GROSS WT (9 minus 10)				
12. TAKEOFF/LANDING LIMITS				
13. SELECTED WEIGHT (9, 11 OR 12)				
14. OPERATING WEIGHT (line 7)				
15. ALLOW PAYLOAD (13 minus 14)				
16. PASSENGER/CARGO MANIFEST	PASSENGER/CARGO WEIGHT			
17. INITIAL ATTACK TOOLS				
18. WATER BUCKET				
19. WATER/RETARDANT (gals)				
20. ACTUAL PAYLOAD (15 or less)				
HELITACK CAPTAIN (Signature)	PILOT (Signature)			